Emergency Telecommunications Service (ETS)

Outputs

- Technical contributions to ANSI Working Group T1A1.2.
- Technical contributions to ITU-T Study Group 9.

In the aftermath of the recent terrorist attacks, the Federal Government has become very interested in priority treatment for emergency communications. While the Government Emergency Telecommunications Service (GETS) has served emergency workers well for many years, it is limited to the Public Switched Telephone Network (PSTN) and to the United States. ETS is envisioned as a GETS-like service that will be available internationally and encompass virtually all wireless and wireline communications networks. The types of traffic to be carried include voice, video, database access, text messaging, e-mail, ftp, and web-based services.

The ETS effort at ITS encompasses two projects — Packet-Switched Networks, and Network Survivability and Restoral. For both of these projects, laboratory studies, security analyses, and traffic engineering are used to support Critical Infrastructure Protection (CIP) initiatives. These two projects are funded by the National Communications System (NCS). This work supports NCS in its mission to protect the national security telecommunications infrastructure, and to ensure the responsiveness and survivability of essential telecommunications during a crisis.

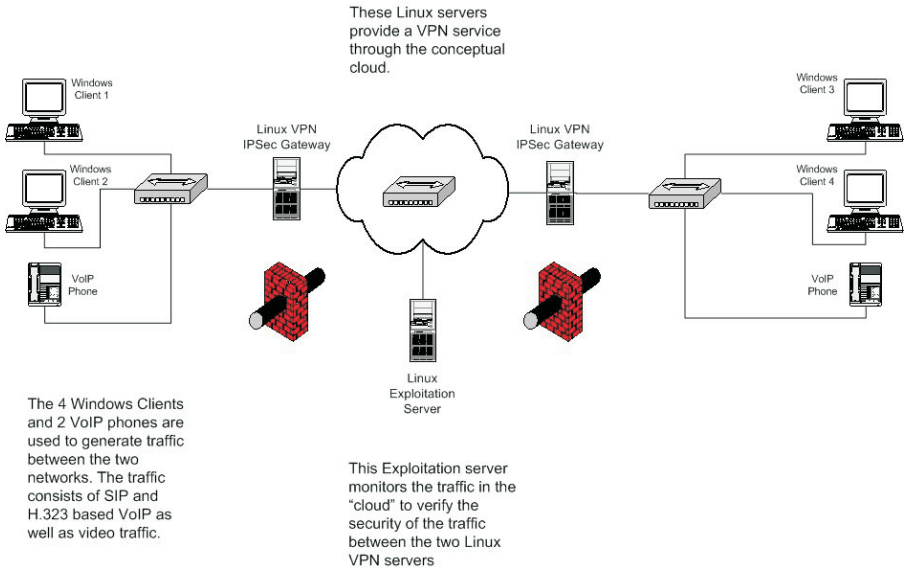
In the first project, Packet-Switched Networks, ITS develops and verifies ETS Recommendations for ITU-T Study Group 9. The major goal of this project is to ensure that future ETS mechanisms will interoperate over broadband cable television networks. Additionally, the project is working to facilitate the evolution of GETS over the IPCablecom network.

The second project, Network Survivability and Restoral, provides ETS expertise relating to network survivability and security for the ANSI-accredited Performance, Reliability, and Quality of Service Committee, PRQC (formerly T1A1). Within this project, an ITS engineer served as co-editor and principle author of a new ANSI Standard: "User Plane Security Guidelines and Requirements for ETS." This Standard provides guidelines and requirements for security aspects of ETS communications relevant to the user plane. These specifications are necessary for implementation and maintenance of secure and reliable ETS communications. Guidelines and requirements regarding cryptographic standards are provided as well.

Table A-1. Priorities for NS/EP Users

Priority Level	Responsibility	Qualifying Criteria
1	Executive Leadership and Policy Makers	Users who qualify for the Executive Leadership and Policy Makers priority will be assigned Priority 1. A limited number of PLMN technicians who are essential to restoring the PLMN networks shall also receive this highest priority treatment. Wireless carrier may assign Priority 1 to its technicians with operational responsibilities.
2	Disaster Response / Military Command and Control	Users who qualify for the Disaster Response / Military Command and Control priority will be assigned Priority 2. Individuals eligible for Priority 2 include personnel key to managing the initial response to an emergency at the local, State, regional, and Federal levels. Personnel selected for this priority should be responsible for ensuring the viability or reconstruction of the basic infrastructure in an emergency area. In addition, personnel essential to the continuity of government and national security functions (e.g., conducting international affairs and intelligence activities) are included.
3	Public Health, Safety, and Law Enforcement Command	Users who qualify for the Public Health, Safety, and Law Enforcement Command priority will be assigned Priority 3. Eligible for this priority are individuals who direct operations critical to life, property, and maintenance of law and order immediately following an event.
4	Public Services / Utilities and Public Welfare	Users who qualify for the Public Services/Utilities and Public Welfare priority will be assigned Priority 4. Eligible for this priority are those users whose responsibilities include managing public works and utility infrastructure damage assessment and restoration efforts and transportation to accomplish emergency response activities.
5	Disaster Recovery	Users who qualify for the Disaster Recovery priority will be assigned Priority 5. Eligible for this priority are those individuals responsible for managing a variety of recovery operations after the initial response has been accomplished.

The table on the previous page is taken from the Appendix of the new ANSI Standard. It defines 5 levels (1 is highest) of emergency users or priorities. The Standard goes further and offers descriptive scenarios to further clarify the distinctions. These levels will be used in the classification of ETS users regarding their security needs. An ITS engineer is now serving as editor on four new draft Standards and Technical Reports related to Security and/or ETS in PRQC's Network Reliability and Security Subcommittee (formerly T1A1.2).



Laboratory setup for testing security and ETS protocols.

The standardization work in ITU-T Study Group 9 is focused on the IPCablecom family of Recommendations. These Recommendations define the protocols and signaling to be used on broadband cable television networks to support telephony, multimedia, and Internet access. The IPCablecom Recommendations have been standardized in ITU-T Study Group 9, and equipment implementing them is currently in production worldwide. One of the goals of this project is to identify where additions or changes might be needed to support the ETS. This effort also involves work with the Internet Engineering Task Force (IETF), since many of the underlying protocols used in IPCablecom (as well as some of the ETS mechanisms) are under development in the IETF. An ITS engineer serves as the Editor of Draft new ITU-T Recommendation J.260 — "Requirements for preferential telecommunications over IPCablecom networks" in Study Group 9. This Recommendation is currently in review under the Traditional Approval Process (TAP). An ITS engineer also serves as the Editor of Draft new ITU-T Recommendation J.PREF — "Specifications for preferential telecommunications over IPCablecom networks" in Study Group 9. This Recommendation will provide specifications to satisfy the requirements set forth in J.260.

Another important study under way at ITS is a series of tests of GETS over IPCablecom networks. The evolution of GETS from a PSTN-only service to one that will interoperate over the wireless, IPCablecom, and Next Generation networks (NGN) is one of the goals of NCS. Determining the security needs of ETS in IPCablecom networks is another goal of the ETS effort. The figure above shows a laboratory setup to test proposed ETS mechanisms over virtual private networks (VPNs) and through firewalls. The lab setup is currently used to test the performance of videoconferencing and Voice over IP over SIP. Proposed ETS mechanisms will be coded and tested over the same network to determine if they are viable from a Quality of Service (QoS) standpoint.

In FY 2005, ITS will continue to address work on the development and standardization of ETS in ATIS PRQC, the IETF, and ITU-T Study Group 9. The projects will address technologies in the NGN and interactions with the IPCablecom networks. This work on ETS must of necessity be conducted with the help of representatives from network providers and cable television equipment manufacturers, as well as NCS. The work in FY 2005 will focus on survivability and security in the NGN ETS as well as GETS compatibility in the IPCablecom networks.

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